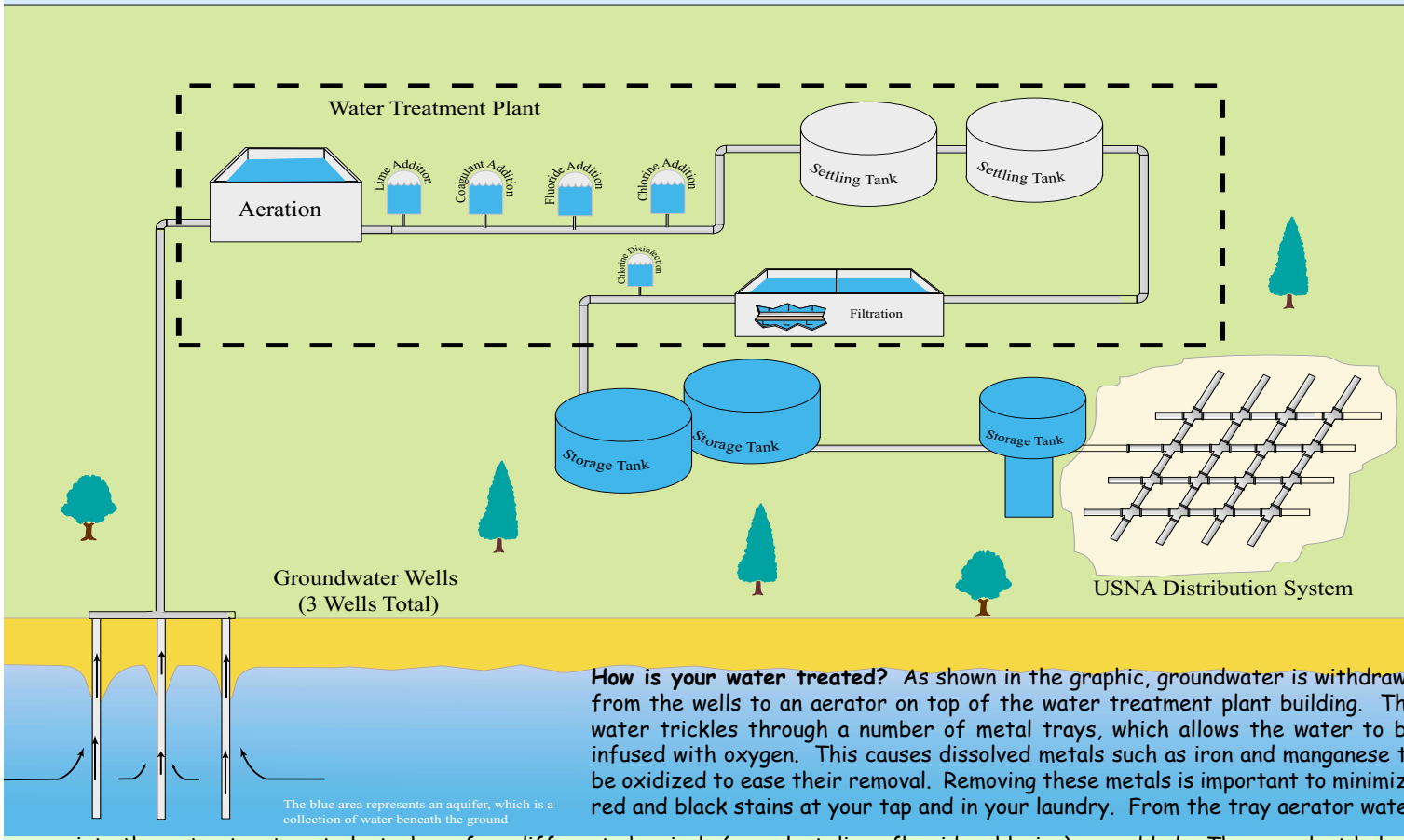
United States Naval Academy
Annapolis, Maryland

2002 WATER QUALITY REPORT

PROVIDING HIGH QUALITY WATER TO OUR PERSONNEL AND THEIR FAMILIES

United States Naval Academy (USNA) is committed to providing you drinking water that is safe and reliable. USNA believes that providing you with accurate information about your water is the best way to assure you that your water is safe. This 2002 Water Quality Report will explain where your water comes from, how it is treated and distributed, as well as information regarding contaminants detected in your water. **We are happy to report that the levels of all contaminants detected in your drinking water were less than the Maximum Contaminant Levels prescribed by the USEPA (EPA) and the Maryland Department of the Environment.**

Where does your water come from? The USNA obtains untreated (raw) water from three groundwater wells owned and maintained by USNA, identified as Well Nos.15, 16, and 17. These wells withdraw groundwater from the Patapsco Aquifer, approximately 700 feet below the ground surface.



How is your water treated? As shown in the graphic, groundwater is withdrawn from the wells to an aerator on top of the water treatment plant building. The water trickles through a number of metal trays, which allows the water to be infused with oxygen. This causes dissolved metals such as iron and manganese to be oxidized to ease their removal. Removing these metals is important to minimize red and black stains at your tap and in your laundry. From the tray aerator water moves into the water treatment plant where four different chemicals (coagulant, lime, fluoride, chlorine) are added . The coagulant helps to make suspended particles in the water stick together and settle out. Lime is added to increase the pH of the water increasing the effectiveness of the coagulant. Chlorine helps to oxidize the remaining dissolved metals and fluoride is added to prevent tooth decay. The water then flows to the clarifier tanks, where it is first mixed to encourage the formation of larger sticky particles ("flocs"), which become heavy and settle, a process called sedimentation. As the water moves through this bed of settled particles ("sludge blanket"), it provides additional filtration. The water is then piped to the filtration tanks located inside the water treatment plant. Two types of media, sand and anthracite ("carbon"), are used to remove any remaining solids or organics from the water. Chlorine is added once again as a disinfectant to ensure there are no remaining microbial contaminants, thus completing the treatment process. The treated ("finished") drinking water is then moved into two large (1 million gallons each) ground storage tanks. A combination of high rate pumps and the elevated 750,000 gallon water tower provide the pressure necessary to move this treated drinking water throughout the distribution system and ultimately to your faucets, drinking water fountains, pools, groundskeeping water, and other places where potable water is required.

Definitions

Action Level (AL) - The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
Coliform - A group of bacteria commonly found in the environment. They are an indicator of potential contamination of water. Adequate and appropriate disinfection effectively destroys coliform bacteria.
Disinfection - A process that effectively destroys coliform bacteria.
Contaminant - Any natural or man-made physical, chemical, biological, or radiological substance or matter in water, which is at a level that may have an adverse effect on public health, and which is known or anticipated to occur in public water systems.
Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.
Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
Nitrates - A dissolved form of nitrogen found in fertilizers and sewage by-products, which may leach into groundwater and other water sources. Nitrates may also occur naturally in some waters.
NTU (nephelometric turbidity unit) - A measure of the clarity of water.
Pathogens; disease-causing pathogens; waterborne pathogens - A pathogen is a bacterium, virus or parasite that causes or is capable of causing disease. Pathogens may contaminate water and cause waterborne disease.
pCi/L, picocuries per liter - A measurement of radiation released by a set amount of a certain compound.
pH - A measure of the acidity or alkalinity of water.
ppb, ppm - part per billion, part per million. Measurements of the amount of contaminant per unit of water. A part per million is like one cent in $10,000 and a part per billion like one cent in $10,000,000.
Trihalomethanes (THM) - Four separate compounds (chloroform, dichlorobromomethane, dibromochloromethane, and bromoform) that form as a result of disinfection.
Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.
Turbidity - A measure of the cloudiness of water caused by suspended particles.

General Information

Your tap water is of high quality and is safe to drink. The USNA water treatment plant is no different from any other public treatment facility and must abide by the requirements imposed by federal (EPA), and state (Maryland Department of the Environment) standards.

USNA routinely monitors your drinking water for over 80 potential contaminants. The sampling schedule varies by parameter ranging from twice monthly to once every several years. For example, microbial testing is performed at five locations across the yard twice per month. If these bacteria are detected, there may also be a potential for the presence of other, more harmful, organisms. No such bacteria were detected during the calendar year 2002 monitoring period. In addition, the water treatment operators maintain a rigorous sampling schedule (some parameters several times per shift) to ensure proper plant operation. These include the monitoring of pH, iron, hardness, and flow continuously so that the proper amount of treatment additives (fluorine, chlorine, lime, polymers) can be used to generate high quality potable water.

There has been a substantial amount of press regarding radon in drinking water. Fortunately, due to the depth of the wells, and our location, the Academy is essentially unaffected by this potential contaminant. There certainly are issues with the presence of radon in shallow groundwater wells in Anne Arundel County, nominally north of Route 50. For those of you who live in northern Anne Arundel County, the Maryland Department of the Environment (who regulates drinking water quality) has an informative web site, which discusses this issue. (www.mde.state.md.us/health/radium.htm)

In the last days of the Clinton administration, USEPA issued a new rule which would lower the maximum contaminant level for arsenic in drinking water from 50 parts per billion (ppb) to 10 ppb. President Bush, among other recently promulgated rules, forced USEPA to reconsider this rule, and they have delayed implementation pending further review. Either way, as you can see from the table, USNA's water is currently in compliance with even this new, proposed standard.

For those of you who reside and/or work on the U.S. Naval Station side of the Severn River, Anne Arundel County has been supplying your water since December 1999 (upon closure of the former David Taylor Research Center's water treatment plant). AA County's Department of Public Works web site is: www.aadpw.org which will lead you to their Consumer Confidence Report which covers the entire county's water service area.

U.S. Naval Academy Monitoring Data

Substance	Common Source	Range	Avg. Level	MCL	Unit	Exceed USEPA standard?
Arsenic	Herbicides, erosion of natural deposits	N/A	<0.01	0.05	mg/l	no
Barium	Erosion of natural deposits	N/A	<0.05	2	mg/l	no
Cadmium	Corrosion of galvanized pipe, erosion of natural deposits	N/A	<0.0005	0.005	mg/l	no
Chromium	Erosion of natural deposits	N/A	<0.001	0.1	mg/l	no
Copper	Corrosion of building plumbing systems	N/A	<0.05 - 0.17	1.3*	mg/l	no
Fluoride	Additive for prevention of tooth decay	0.8 - 1.16	1	4	mg/l	no
Lead	Corrosion of household piping, erosion of natural deposits	N/A	<0.005	0.015*	mg/l	no
Mercury	Discharge from refineries & factories, erosion of natural deposits, landfill runoff	N/A	<0.0002	0.002	mg/l	no
Nickel	Erosion of natural deposits	N/A	<0.05	0.1	mg/l	no
Nitrate	Fertilizer runoff, leaching from septic tanks, erosion of natural deposits	N/A	<0.5	10	mg/l	no
Selenium	Erosion of natural deposits, discharges from refineries or mining operations	N/A	<0.005	0.05	mg/l	no

* Action Level for > 10% of sample / sites

NEED MORE INFORMATION OR HAVE QUESTIONS?

EPA's Safe Drinking Water HOT LINE: 1-800-426-4791; or visit their website at: www.epa.gov/safewater

Anne Arundel County's website at: www.co.anne-arundel.md.us

Maryland Department of the Environment's website at: www.mde.state.me.us

U.S. Naval Academy's web site: www.usna.edu (site index to environmental division or water)

If you have any questions or comments about the U.S. Naval Academy 2002 Water Quality Report please contact:

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